REQUIREMENTS FOR

UNDERGROUND AND ABOVEGROUND STORAGE TANK CLOSURE SAMPLING & REPORTING

Per New Hampshire Code of Administrative Rules

Env-Wm 1401 Underground Storage Facilities
Env-Wm 1402 Control of Aboveground Petroleum Storage Facilities

STATE OF NEW HAMPSHIRE
DEPARTMENT OF ENVIRONMENTAL SERVICES
WASTE MANAGEMENT DIVISION
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A. INTRODUCTION

These sampling and reporting requirements for underground and aboveground storage tank closure were prepared by the Department of Environmental Services (NHDES) Waste Management Division (Division). These requirements are in accordance with State of New Hampshire Code of Administrative Rules Env-Wm 1401, *Underground Storage Facilities* and Env-Wm 1402 *Control of Aboveground Petroleum Storage Facilities*. Petroleum contamination encountered during the tank closure process must be reported in accordance with New Hampshire Code of Administrative Rules Env-Or 604, *Notification*. Contaminated soils generated during the tank closure process must be managed in accordance with New Hampshire Code of Administrative Rules Env-Or 605.04, *Initial Response Actions* and Env-Wm 100-1100, *Hazardous Waste Rules*. Procedures for the management of Non-Hazardous Oil Contaminated Soil and Hazardous Waste Contaminated Soils contained in Appendix A of this document must be followed if contamination is encountered. The Division also has established procedures for collection and preservation of soil samples. A web link to the Final Policy on Preservation of VOC's in Soil Samples is provided below.

Please note that in accordance with Env-Wm 1401-18(e) the facility owner must notify the Division at least 30-days prior to any scheduled tank closure activities at (603) 271-3644 or email at ORCB.WMD@des.nh.gov. At that time the facility owner should obtain latest guidance and policy regarding tank closure requirements. Also note that the NH Petroleum Reimbursement Fund Rules (Odb 100-600) require prior Division approval of any costs associated with the management of petroleum contaminated soil. Please contact Division staff at (603) 271-8740 regarding petroleum fund reimbursement requirements.

Copies of the above rules and other related policy are also available by calling the NHDES Public Information and Permit Office at (603) 271-2975, or are available on NHDES' Web Site at the following links:

Web Links

Env-Wm 1401, Underground Storage Facilities –
http://des.nh.gov/organization/commissioner/legal/rules/index.htm#oil

Env-Or 600, Contaminated Site Management –
http://des.nh.gov/organization/commissioner/legal/rules/index.htm#oil

Env-Wm 1402, Control of Aboveground Petroleum Storage Facilities –
http://des.nh.gov/organization/commissioner/legal/rules/index.htm#oil

Soil Sampling and Preservation -
http://des.nh.gov/organization/commissioner/pip/publications/wmd/documents/voc.pdf

Petroleum Reimbursement Fund Guidance Manual-
http://des.nh.gov/organization/divisions/waste/orcb/fms/prfp/documents/ofdb_manual.pdf

B. PURPOSE

The purpose of these requirements is to establish uniformity among submittals, increase confidence in data quality and improve Division review and response time. NHDES may reject the report and closure as incomplete or may require further reporting if these requirements are not followed. These requirements do not replace or supersede NHDES rules or policy.

C. DISCLAIMER

Information contained in these guidelines is current as of August 2008. Statutory or regulatory changes that may occur after this date may cause part or all of the information to be invalid. If there are any questions concerning the status of the information please refer to Env-Wm 1401.18, *Permanent Closure* for UST's or Env-Wm 1402.15 *Site Assessment After Removal* for AST's or contact NHDES Staff at (603) 271-3644.

D. TANK RELEASE ASSESSMENT AND SAMPLING

An assessment shall be conducted by a qualified consultant to determine if contamination is present and shall include the following screening, sampling, and analysis procedures.

1. Before tanks are removed, existing release detection devices and subsurface monitoring locations should be inspected for leakage and samples collected from appropriate soil or groundwater locations. Monitoring wells on the site shall be sampled in accordance with Appendix B of this document.

2. For each tank and piping system which will be removed or closed in place, field screening shall be completed to determine the location of possible releases and resulting contamination.

3. Soil and groundwater samples shall be collected from each tank being removed or closed-in-place. The number and type of samples submitted for laboratory analysis is described and summarized in the table below. Soil samples shall be collected and preserved in conformance with the NHDES March 2000 *Final Policy; Preservation of VOC's in Soil Samples*. Groundwater samples shall be collected whenever feasible by excavating to the depth of the equipment used for the tank removal. This may entail excavation deeper than the installed depth of the underground storage tank(s).

Table – Summary of Tank Closure Soil and Groundwater Sampling Requirements

Subsurface Conditions Observed During Tank Closure	Soil Samples	Groundwater Samples
a. No Soil Contamination, and No Groundwater Encountered	1 Composite	Not Required
b. No Soil Contamination, With Groundwater Encountered	1 Composite	1 Discrete Grab
c. Soil Contamination, and No Groundwater Encountered	2 Discrete	Monitoring Wells or Nearby Water Supply Wells Required; Groundwater from Tank Grave Required if Feasible
d. Soil Contamination, With Groundwater Encountered	2 Discrete	1 Discrete Grab

See notes below for additional explanation on soil and groundwater sampling requirements.

a. **No soil contamination observed and no groundwater encountered:** A minimum of one composite soil sample comprised of at least five discrete grab samples shall be collected from representative locations immediately beneath each tank and piping system. For each tank and piping system which will be closed in place, samples shall be collected at representative

locations adjacent to or beneath the tank and piping system by excavating adjacent to the tank and piping system, or by cutting sampling access points through the tank wall.

b. **No soil contamination observed with groundwater encountered:** A minimum of one discrete groundwater sample shall be collected and a minimum of one composite soil sample for each tank comprised of at least five discrete grab samples shall be collected from representative locations immediately beneath or adjacent to the tank and piping system. If groundwater contamination within the excavation is observed by physical observations or field screening, the discrete groundwater sample shall be collected within the area of highest observed contamination.

c. **Soil contamination is observed and no groundwater encountered:** If no groundwater is encountered, but soil contamination is observed through physical observations or field screening, a minimum of two discrete soil samples shall be collected from representative locations immediately beneath or adjacent to the tank and piping system. Discrete soil samples shall be collected within the area of highest observed contamination. Groundwater shall be sampled whenever feasible, as required by Env-Wm 605.04 (b)(7). Feasibility shall be determined by the depth that the excavating equipment can safely encounter groundwater. Onsite or nearby supply wells, if appropriate, shall be sampled and analyzed by EPA Method 524.2. If contamination is believed to be limited in extent, additional soil or groundwater samples beyond the mandatory samples may be collected to define the extent of contamination.

d. **Soil contamination is observed and groundwater is encountered:** A minimum of one discrete groundwater sample and a minimum of two discrete soil samples shall be collected from representative locations immediately beneath or adjacent to the tank and piping system. Discrete soil samples shall be collected within the area of highest observed contamination. If contamination is believed to be limited in extent, additional soil or groundwater samples may be collected to define the extent of contamination.

4. If free product is encountered, a minimum of one sample of the product should be collected for laboratory analysis to determine the product characteristics, including an estimate of the type of product (i.e., gasoline, kerosene, fuel oil, etc.) and degree of weathering. This information shall be included in the tank closure report.

5. Physical observations including any evidence that soil contamination is present should be recorded in the field and included in the tank closure report. These observations may include:

    a. Backfill materials and surrounding native soil type;
    b. Areas of stained or darkened soil; and or sheen or product on the groundwater.
    c. Evidence of the seasonal depth to groundwater and other observations;
    d. An apparent petroleum odor in soil or groundwater; and
    e. Corrosion or holes in tank and system components.

    Other information such as site history of spills, loss of product, inventory records, should be included in the tank closure report to assess if a release may have occurred and if there is a potential for contamination to be present.

E. ANALYSIS

Analysis of soil and groundwater samples shall include field observations and measurements and laboratory analysis.

1. Field screening of soil or groundwater samples shall include headspace analysis performed with a portable photo ionization detector (PID), flame ionization detector (FID) or similar instrument. Any visual observations shall be noted (i.e., soil type, dry/damp/wet;apparent contamination, etc.).

2. Laboratory analysis shall be performed in accordance with the soil and water analysis listed in Appendix B of this document.

3. Soil samples shall be collected following the NHDES March 2000 *Final Policy Preservation of Soil Samples for VOC Analysis*. Groundwater samples shall be collected following appropriate EPA protocol. Water samples shall be preserved to limit bacterial decomposition of organics. All samples must be immediately stored on ice or refrigerated until delivery to the laboratory, and must be accompanied by an appropriate chain of custody.

F. REPORTING

1. A written underground storage tank closure investigation report relating to the tank and piping system closure shall be submitted to NHDES within 30-days of closure. For aboveground storage tank systems, results of the assessments and laboratory analyses shall be submitted to NHDES within 60 days of the AST system dismantling. The report shall include:

    a. The Department site number and UST facility numbers;
    b. The site name and address;
    c. The name, mailing address and daytime telephone number of the site owner and of a contact person for the site;
    d. The names and affiliation of all on-site personnel including facility owner/operator and closure contractor(s) with IFCI certification number;
    e. A completed UST/AST System Closure Notification Form (Appendix C);
    f. Results of field screening, field sampling and laboratory analysis;
    g. A USGS locus map drawn to scale showing the site location;
    h. A site map drawn to scale showing the location of site buildings, discharge locations, property boundaries**,** tank system components, extent of excavations, sampling locations, a north arrow, a graphic scale bar, prominent site physical features for reference, locations of any supply wells or monitoring wells, drainage swales, streams or wetlands on or adjacent to the property;
    i. Subsurface information obtained during excavation activities in the form of a test pit log, including soil descriptions, sample locations, and depth of groundwater, if encountered;
    j. Results of the detailed visual inspection of each removed tank, or closed-in-place tank system;
    k. Labeled photographs indicating the former tank system(s) location(s) and orientation, including photographs showing corrosion, holes and indication of leakage, such as sheens or product. For close-up photographs, include a familiar object such as a pencil or other small object for scale reference;
    l. If closure in-place was selected, a justification for this closure per Env-Wm 1401.18 (5) and how the tank was closed to meet the requirement of Env-Wm 1401.18(6); and
    m. A description of any supply wells or monitoring wells located on the property and/or visible on any adjacent properties.

Appendix A

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

NON-HAZARDOUS OIL CONTAMINATED SOIL CERTIFICATION
NH Admin. Rules Env-Or 611

Soils which are contaminated with oil as defined in RSA 146-A:2,III shall be characterized to determine whether the soils can be certified as Non-hazardous Oil Contaminated Soil (NOCS) and managed in accordance with Env-Or 600, or must be managed as a hazardous waste in accordance with Env-Wm 100-1100.

To obtain NOCS certification, the following steps must be completed. The site owner or other responsible party must complete a summary of site ownership and history of use at the site. The site owner's environmental consultant or environmental contractor shall then observe the site and the contaminated soils, and review the site history. If the contaminated soils are derived from an oil discharge from a household or from underground storage facilities regulated under RSA 146-C, and site history reveals no known activity during the past 30 years which might have caused the soil to become contaminated with a hazardous waste, the responsible party's environmental consultant or environmental contractor may certify the soil as NOCS.

For certified NOCS destined for off-site disposal, composite samples shall be collected in accordance with Env-Or 611.04 and analyzed for ignitability, volatile organics, and total petroleum hydrocarbons to further characterize the soils prior to transportation off-site. If the quantity of NOCS is less than 50 tons, sampling and analysis shall not be required except as required by the receiving facility. Soils, which fail the ignitability test may not be transported as NOCS and must be managed as hazardous waste in accordance with Env-Wm 100-1100.

Certified NOCS that is transported off-site shall be accompanied by a bill of lading, the completed NOCS certification form and if greater than 50 tons, the required analytical results. The site owner and the treatment facility shall each keep a copy of the completed NOCS certification form and the analytical results. In addition, the site owner shall forward a copy of same to the DES immediately after the form is signed and the analytical results are available.

HAZARDOUS WASTE CONTAMINATED SOILS
NH Admin. Rules Env-Wm 100-1100

If contaminated soils are not generated from households or UST facilities, or the site history shows activity during the past 30 years, that might have caused the soils to become contaminated with hazardous waste, the soils may still be certified as NOCS provided that a minimum of one composite sample collected from the most contaminated area is analyzed in accordance with Env-Wm 403.03, 403.04, 403.05 and 403.06 and Table 4.9 of Env-Wm 403 for the toxicity characteristics. If the concentrations exceed the acceptable limits in Table 4.9, the soils shall not be certified as NOCS, and must be managed as hazardous waste in accordance with Env-Wm 100-1100.

Appendix B

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES
RECOMMENDED ANALYTICAL METHODS FOR PETROLEUM CONTAMINATED SITES (see note 1)

PETROLEUM PRODUCT	WATER MATRIX			SOIL MATRIX (see note 2)		
		Recommended Analytical Methods			Recommended Analytical Methods	
	Analytes	Initial Round	All Other Samples (see notes 3 & 9)	Analytes	Initial Round	All Other Samples (see note 3)
Gasoline and similar weight product	VOC (see note 4)	Full VOC List	Full VOC List	VOC (see note 4) TPH-as Gasoline	Full VOC List (see note 8) 8015B-GRO (see note 8)	Full VOC List (see note 8) 8015B-GRO (see note 8)
No. 2, 4, 6 Fuel Oil Diesel Waste Oil(see note 5) and similar weight product	VOC (see note 4) PAH (see note 6)	Full VOC List 8310 or 525 or 8270(see note 7)	Full VOC List 8310 or 525 or 8270(see note 7)	VOC (see note 4) PAH(see note 6), TPH-as Fuel Oil As, Ba, Cd, Cr, Pb, Hg, Se, Ag (waste oil only- see note 5)	Full VOC List (see note 8) 8270 or 8310, 8015B-DRO 6010 or 7060, 7080, 7130, 7190, 7420, 7470, 7740 cold vapor, 7760	Full VOC List (see note 8) 8270 or 8310 8015B-DRO 6010 or 7060, 7080, 7130, 7190, 7420, 7470, 7740 cold vapor, 7760

VOC: Volatile Organic Compounds
TPH: Total Petroleum Hydrocarbons
DRO: Diesel Range Organics
GRO: Gasoline Range Organics
PAH: Polyaromatic Hydrocarbons
P&T-GC/FID: Purge and Trap - Gas Chromatography / Flame Ionization Detector
TCLP: Toxicity Characteristic Leaching Procedure
AGQS: Ambient Groundwater Quality Standards
RCMP: NHDES Contaminated Sites Risk Characterization and Management Policy

NOTES: (1) EPA method results must be reported to DES according to SW 846 current edition.
(2) Soils destined for off-site treatment must be analyzed in accordance with Env-Or 611.
(3) For the purpose of site closure, the analytical method shall be capable of detecting concentrations at or below the regulatory cleanup level.
(4) For VOC analytical methods and reporting requirements, see the footnotes in the “Petroleum and Hazardous Waste Full List of Analytes for Volatile Organics”
(5) Metals analysis must be performed on waste oil contaminated soils. Soil standards in the NHDES RCMP (Appendix E) are based on total metals. Analysis for soils destined for off-site treatment is based on TCLP.
(6) PAH analysis shall be completed on all sampling locations during the initial round of sampling for soil and water.
(7) DES may require multiple dilution runs or compound specific analysis for selected compounds to reach the required VOC standard.
(8) Soil samples collected for VOC analysis shall use EPA 5035 (methanol preservation) as required in the NHDES Soil Policy.
(9) NHDES May require additional field testing and laboratory analysis of geochemical indicators a site specific basis.